

Please amend the claims as follows:

D<sup>1</sup> 1. (amended) A microcapsule consisting of internal, immiscible liquid phases enclosed within a  
2 polymer outer membrane having a melting temperature, and one or more energy absorbing  
3 components selected from the group consisting of amorphous carbon, graphite, aluminum powder,  
4 acetylene black, sodium amyl alcohol, sorbitan monoleate, 2% sorbitan monooleate/20 moles  
5 ethylene oxide, and paraffin oil, in an internal liquid phase in contact with the outer membrane,  
6 said energy absorbing component having a higher specific absorption rate for magnetic,  
7 radiofrequency, microwave, or ultrasound energy than the specific absorption rate of the polymer  
8 membrane, wherein the temperature of said energy absorbing component is increased by  
9 absorbing said energy to melt at least a portion of the poly membrane.

D<sup>2</sup> 9. (amended) The microcapsule of claim 75, wherein said drug or drug precursor is an anti-  
2 cancer drug or anti-cancer drug precursor.

D<sup>3</sup> 11. (amended) The microcapsule of claim 75, wherein said drug or drug precursor is an  
2 anesthetic.

D<sup>4</sup> 13. (amended) The microcapsule of claim 75, wherein said drug or drug precursor is a systemic  
2 antibiotic.

Ø5  
1 15. (amended) The microcapsule of claim 75, wherein said drug or drug precursor is a systemic  
2 antifungal.

Ø6  
1 17. (amended) The microcapsule of claim 75, wherein said drug or drug precursor is a systemic  
2 antiviral.

Ø7  
1 19. (amended) The microcapsule of claim 75, wherein said drug or drug precursor is an anti-  
2 parasitic.

1 20. (amended) The microcapsule of claim 75, wherein said drug or drug precursor is an anti-  
2 inflammatory.

1 21. (amended) The microcapsule of claim 75, wherein the drug or drug precursor is a hormone,  
2 a steroid, hydrocortisone, dexamethasone, a systemic quinolone, an aminoglycoside, an antidote,  
3 an anti-cholinesterase, a metal poisoning antidote, a cytotoxic agent, an immunomodulator, a  
4 cytokine, an interleukin, an alpha-antitrypsin, a bone metabolism regulator, a hypercalcemic  
5 agent, a cardiovascular agent, a beta blocker, a cerebral vasodilator, a cerebral metabolic  
6 enhancer, a colony stimulating factor, a granulocyte-colony stimulating factor, a granulocyte  
7 macrophage-colony stimulating factor, a vasopressor, a local diabetic agent, a CT scan enhancer,  
8 an angiocardiology agent, an adenosine deaminase deficiency agent, a gonadotropin inhibitor,

9 an adrenal cortical steroid inhibitor, a gonadotropin releasing hormone stimulant, a  
10 urofollitropin, a muscle relaxant, a neuromuscular blocking agent, a prostaglandin analog, a  
11 prostaglandin, a prostaglandin inhibitor, a respiratory therapy agent, an anticholinergic, a beta  
12 andrenergic stimulator, metoclopramide, tetrahydrocannabinol or a sympathomimetic.

1 22. (amended) The microcapsule of claim 75, wherein said drug or drug precursor is a  
2 thrombolytic agent.

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1 24. (amended) The microcapsule of claim 72, wherein the magnetic particles comprise oxides  
2 of iron, nickel and zinc.

1 25. (amended) The microcapsule of claim 72, wherein the magnetic particles comprise about 66  
2 wt %  $\text{Fe}_2\text{O}_3$ , about 9 wt %  $\text{NiO}$ , and about 25 wt %  $\text{ZnO}$ .

1 26. (amended) The microcapsule of claim 72, wherein the magnetic particles comprise  $\text{Fe}_3\text{O}_4$ ,  
2 oxides of copper, gold, silver or combinations thereof.

1 27. (amended) The microcapsule of claim 72, wherein the magnetic particles comprise a  
2 ceramic coating.

28. (amended) The microcapsule of claim 72, wherein the magnetic particles comprise a methacrylate, alginate, dextran, polyacrylate, or polyvinyl pyrrolidone coating.

29. (amended) The microcapsule of claim 72, wherein the magnetic particles have a Curie temperature of from about 41°C to about 95°C.

37. (amended) The microcapsule of claim 77, wherein the radiocontrast media is a halogenated oil.

38. (amended) The microcapsule of claim 37 wherein the halogenated oil is poppy seed oil, cotton seed oil, soybean oil, safflower oil, corn oil, sunflower seed oil, sesame seed oil, or canola oil.

41. (amended) A composition consisting of microcapsules, wherein said microcapsules consist of two or more internal, immiscible liquid phases enclosed within a polymer outer membrane having a melting temperature, and further consisting of one or more magnetic particles selected from the group consisting of oxides of iron, nickel copper, gold, silver, and zinc, in an internal liquid phase in contact with the outer membrane, wherein the magnetic particles have a Curie point higher than the melting temperature of the polymer membrane; and further wherein a first portion of said microcapsules contain magnetic particles with a first Curie point, and a second portion of said microcapsules contain magnetic particles with a second Curie point, and further

9 wherein the first Curie point is different than said second Curie point.

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*D11*  
1 43. (amended) The composition of claim 78, wherein said first portion contains a different drug  
2 than said second portion.

1 44. (amended) A method of controlling the release of a drug consisting of:  
2 providing a drug delivery solution consisting of microcapsules consisting of internal,  
3 immiscible liquid phases enclosed within a polymer outer membrane having a melting  
4 temperature, and one or more energy absorbing components selected from the group consisting  
5 of amorphous carbon, graphite, aluminum powder, acetylene black, sodium amyl alcohol,  
6 sorbitan monoleate, 2% sorbitan monooleate/20 moles ethylene oxide, and paraffin oil, in an  
7 internal liquid phase in contact with the outer membrane, wherein the energy absorbing  
8 component has a higher specific absorption rate for electromagnetic, radiofrequency, microwave,  
9 or ultrasound energy than the specific absorption rate of the polymer membrane, and a drug  
10 contained in at least one of the internal liquid phases;  
11 administering the drug delivery solution to a subject; and  
12 exposing the microcapsule to an energy source, effective to heat the internal component  
13 and to melt at least a portion of the polymer outer membrane and to release the drug.

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*D12*  
1 49. (amended) The method of claim 79, wherein the electromagnetic field is an electromagnetic  
2 field with a frequency of from about 20 to about 500 KHz.

D12  
Cath

1 50. (amended) The method of claim 79, wherein the electromagnetic field is an electromagnetic  
2 field with a frequency of from about 85 to about 100 KHz.

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D13

1 55. (amended) The method of claim 81, wherein the microcapsules are administered to a subject  
2 and detected at a target site by radiography, prior to heating the internal component.

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Please add the following claims:

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D14

1 72. A microcapsule consisting of internal, immiscible liquid phases enclosed within a  
2 polymer outer membrane having a melting temperature, and a particle that is capable of  
3 becoming magnetized when a magnetic field is applied to said particle, said particle in an  
4 internal liquid phase in contact with the outer membrane, said particle having a higher specific  
5 absorption rate for magnetic energy than the specific absorption rate of the polymer membrane,  
6 wherein the temperature of said particle is increased by absorbing said energy to melt at least a  
7 portion of the poly membrane.

1 73. A microcapsule consisting of internal, immiscible liquid phases enclosed within a  
2 polymer outer membrane having a melting temperature, and a spheroid of one or more energy  
3 absorbing components selected from the group consisting of amorphous carbon, graphite,  
4 aluminum power, acetylene black, sodium amyl alcohol, sorbitan monoleate, 2% sorbitan

5 monooleate/20 moles ethylene oxide, and paraffin oil, in an internal liquid phase in contact with  
6 the outer membrane, said spheroid having a higher specific absorption rate for ultrasound energy  
7 than the specific absorption rate of the polymer membrane, wherein the temperature of said  
8 spheroid is increased by absorbing said energy to melt at least a portion of the poly membrane.

1 74. A microcapsule consisting of internal, immiscible liquid phases, said liquid phases  
2 consisting of at least one internal aqueous phase and at least one internal hydrocarbon phase,  
3 enclosed within a polymer outer membrane having a melting temperature, and one or more  
4 energy absorbing components selected from the group consisting of amorphous carbon, graphite,  
5 aluminum power, acetylene black, sodium amyl alcohol, sorbitan monooleate, 2% sorbitan  
6 monooleate/20 moles ethylene oxide, and paraffin oil, in an internal liquid phase in contact with  
7 the outer membrane, said energy absorbing component having a higher specific absorption rate  
8 for magnetic, radiofrequency, microwave, or ultrasound energy than the specific absorption rate  
9 of the polymer membrane, wherein the temperature of said energy absorbing component is  
10 increased by absorbing said energy to melt at least a portion of the poly membrane.

1 75. A microcapsule consisting of internal, immiscible liquid phases enclosed within a  
2 polymer outer membrane having a melting temperature, one or more energy absorbing  
3 components selected from the group consisting of amorphous carbon, graphite, aluminum power,  
4 acetylene black, sodium amyl alcohol, sorbitan monooleate, 2% sorbitan monooleate/20 moles  
5 ethylene oxide, and paraffin oil, and a drug or drug precursor, in an internal liquid phase in

6 contact with the outer membrane, said energy absorbing component having a higher specific  
7 absorption rate for magnetic, radiofrequency, microwave, or ultrasound energy than the specific  
8 absorption rate of the polymer membrane, wherein the temperature of said energy absorbing  
9 component is increased by absorbing said energy to melt at least a portion of the poly membrane.

1 76. A microcapsule consisting of internal, immiscible liquid phases enclosed within a  
2 polymer outer membrane having a melting temperature, one or more energy absorbing  
3 components selected from the group consisting of amorphous carbon, graphite, aluminum power,  
4 acetylene black, sodium amyl alcohol, sorbitan monoleate, 2% sorbitan monooleate/20 moles  
5 ethylene oxide, and paraffin oil, and a drug precursor in a first internal liquid phase and an  
6 activator of said drug precursor in a second internal liquid phase immiscible with the first  
7 internal liquid, one of said internal liquid phases in contact with the outer membrane, said energy  
8 absorbing component having a higher specific absorption rate for magnetic, radiofrequency,  
9 microwave, or ultrasound energy than the specific absorption rate of the polymer membrane,  
10 wherein the temperature of said energy absorbing component is increased by absorbing said  
11 energy to melt at least a portion of the poly membrane.

1 77. A microcapsule consisting of internal, immiscible liquid phases enclosed within a  
2 polymer outer membrane having a melting temperature, and one or more energy absorbing  
3 components selected from the group consisting of amorphous carbon, graphite, aluminum power,  
4 acetylene black, sodium amyl alcohol, sorbitan monoleate, 2% sorbitan monooleate/20 moles  
5 ethylene oxide, and paraffin oil, and containing a radiocontrast media, in an internal liquid phase  
6 in contact with the outer membrane, said energy absorbing component having a higher specific



7 absorption rate for magnetic, radiofrequency, microwave, or ultrasound energy than the specific  
8 absorption rate of the polymer membrane, wherein the temperature of said energy absorbing  
9 component is increased by absorbing said energy to melt at least a portion of the poly membrane.

1 78. A composition consisting of microcapsules, wherein said microcapsules consist of two or  
2 more internal, immiscible liquid phases enclosed within a polymer outer membrane having a  
3 melting temperature, and further consisting of one or more magnetic particles selected from the  
4 group consisting of oxides of iron, nickel copper, gold, silver, and zinc, in an internal liquid  
5 phase in contact with the outer membrane, wherein the magnetic particles have a Curie point  
6 higher than the melting temperature of the polymer membrane; and further wherein a first  
7 portion of said microcapsules contain magnetic particles with a first Curie point, and a second  
8 portion of said microcapsules contain magnetic particles with a second Curie point, and further  
9 wherein the first Curie point is different than said second Curie point; and wherein at least  
10 certain of the microcapsules contain a drug in said first or second portion or both.

1 79. A method of controlling the release of a drug consisting of:  
2 providing a drug delivery solution consisting of microcapsules consisting of internal,  
3 immiscible liquid phases enclosed within a polymer outer membrane having a melting  
4 temperature, and one or more energy absorbing components in an internal liquid phase in contact  
5 with the outer membrane, wherein the energy absorbing component is a magnetic particle and  
6 the energy is a magnetic field, wherein the energy absorbing component has a higher specific

7 absorption rate for electromagnetic energy than the specific absorption rate of the polymer  
 8 membrane, and a drug contained in at least one of the internal liquid phases;  
 9 administering the drug delivery solution to a subject; and  
 10 exposing the microcapsule to an energy source, effective to heat the internal component  
 11 and to melt at least a portion of the polymer outer membrane and to release the drug.

*D 14 Cont*  
 1 80. A method of controlling the release of a drug consisting of:  
 2 providing a drug delivery solution consisting of microcapsules consisting of internal,  
 3 immiscible liquid phases enclosed within a polymer outer membrane having a melting  
 4 temperature, and one or more energy absorbing components in an internal liquid phase in contact  
 5 with the outer membrane, wherein the energy absorbing component consists of a spheroid within  
 6 the microcapsule, and wherein the energy is ultrasound, wherein the energy absorbing  
 7 component has a higher specific absorption rate for ultrasound energy than the specific  
 8 absorption rate of the polymer membrane, and a drug contained in at least one of the internal  
 9 liquid phases;  
 10 administering the drug delivery solution to a subject; and  
 11 exposing the microcapsule to an energy source, effective to heat the internal component  
 12 and to melt at least a portion of the polymer outer membrane and to release the drug.

1 81. A method of controlling the release of a drug consisting of:  
 2 providing a drug delivery solution consisting of microcapsules consisting of internal,

3 immiscible liquid phases enclosed within a polymer outer membrane having a melting  
4 temperature, and one or more energy absorbing components in an internal liquid phase in contact  
5 with the outer membrane, wherein the energy absorbing component is a magnetic particle and  
6 the energy is a magnetic field, wherein the energy absorbing component has a higher specific  
7 absorption rate for electromagnetic energy than the specific absorption rate of the polymer  
8 membrane, and a drug contained in at least one of the internal liquid phases, wherein the  
9 microcapsules contain a drug precursor in a first internal liquid phase and an activator of the drug  
10 precursor in a second internal liquid phase immiscible with the first internal liquid phase;  
11 exposing the microcapsules to an energy source effective to mix the immiscible internal  
12 liquid phases and increase the kinetics of activation of the drug precursor prior to heating the  
13 magnetic particles;  
14 administering the drug delivery solution to a subject; and  
15 exposing the microcapsule to an energy source, effective to heat the internal component  
16 and to melt at least a portion of the polymer outer membrane and to release the drug.

1 82. A method of controlling the release of a drug consisting of:

2 providing a drug delivery solution consisting of microcapsules consisting of internal,  
3 immiscible liquid phases enclosed within a polymer outer membrane having a melting  
4 temperature, and one or more energy absorbing components selected from the group consisting  
5 of amorphous carbon, graphite, aluminum powder, acetylene black, sodium amyl alcohol,  
6 sorbitan monoleate, 2% sorbitan monooleate/20 moles ethylene oxide, and paraffin oil, in an

7 internal liquid phase in contact with the outer membrane, wherein the energy absorbing  
8 component has a higher specific absorption rate for electromagnetic, radiofrequency, microwave,  
9 or ultrasound energy than the specific absorption rate of the polymer membrane, and a drug  
10 contained in at least one of the internal liquid phases, and wherein the microcapsules contain a  
11 radiocontrast medium;

12 wherein the microcapsules are administered to a subject intraarterially, intravenously,  
13 intraperitoneally, directly into a tissue, or directly into a tumor;

14 administering the drug delivery solution to a subject; and

15 detecting said microcapsules at a target site by radiography, prior to heating the internal  
16 component;

17 exposing the microcapsule to an energy source, effective to heat the internal component  
18 and to melt at least a portion of the polymer outer membrane and to release the drug.

1 83. A composition consisting of at least two groups of microcapsules, wherein the  
2 microcapsules of said groups of microcapsules consist of one or more internal liquid phases  
3 enclosed within a polymer outer membrane having a melting temperature, and further consisting  
4 of one or more magnetic particles in an internal liquid phase in contact with the outer membrane,  
5 and wherein the microcapsules of a first group of said microcapsules have a polymer outer  
6 membrane with a different melting point than microcapsules of a second group of said  
7 microcapsules, and wherein both the first and second melting points are lower than the Curie  
8 point of the magnetic particles, said microcapsules contain a drug in a least one of said internal

9 liquid phases.

1 84. A composition consisting of at least two groups of microcapsules, wherein the  
2 microcapsules of said groups of microcapsules consist of one or more internal liquid phases  
3 enclosed within a polymer outer membrane having a melting temperature, and further consisting  
4 of one or more magnetic particles in an internal liquid phase in contact with the outer membrane,  
5 and further wherein the microcapsules of a first group of said microcapsules have a polymer  
6 outer membrane with a different melting point than microcapsules of a second group of said  
7 microcapsules, and wherein both the first and second melting points are lower than the Curie  
8 point of the magnetic particles, and wherein said first group of microcapsules contains a different  
9 drug than said second group of microcapsules.

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